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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,896	12/17/2001	Yong Sung Ham	49128-5033	7304

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WASHINGTON, DC 20004

EXAMINER
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LAO, LUN YI

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 02/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/015,896	Applicant(s) HAM, YONG SUNG	
	Examiner Lao Y Lun	Art Unit 2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Usui et al(5,465,102).

As to claims 5-7, Usui et al teach a color LCD display apparatus for comparing(ROM) a data voltage of current frame and a data voltage of a previous frame; increasing a data voltage of a current frame(overshoot) if the data voltage of the current frame is greater than the previous frame, and decreasing the data voltage of the current frame(undershoot) if the data voltage of the current period is smaller than the previous frame(see figures 1, 18, 3-5; 21; abstract; column 3, lines 39-68; column 4, lines 1-33; column 5, lines 32-68; column 6, lines 1-16 and column 20, lines 28-60).

As to claims 6-7, Usui et al teach a data voltage having most significant bit data(D5) and least significant bit data(D1)(see figures 1-2; column 3, lines 66-68 and column 4, lines 1-33).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 , 8-11 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Usui et al(5,465,102) in view of Kuga(5,828,367).

As to claims 1-4, 8-11 and 13-14, Usui et al teach a color LCD display apparatus for comparing(ROM) a data voltage of current frame and a data voltage of a previous frame; increasing a data voltage of a current frame(overshoot) if the data voltage of the current frame is greater than the previous frame, and decreasing the data voltage of the current frame(undershoot) if the data voltage of the current period is smaller than the previous frame(see figures 1, 18, 3-5; 21; abstract; column 3, lines 39-68; column 4, lines 1-33; column 5, lines 32-68; column 6, lines 1-16 and column 20, lines 28-60).

Usui et al fail to disclose display apparatus for decreasing a data voltage of a current frame if the data voltage of the current frame is the same as the previous frame.

Kuga teach an LCD display apparatus for decreasing a data voltage of a current frame if the data voltage of the current frame is the same as the previous frame(see figures 4-5; column 2, lines 33-39 and column 5, lines 17-25). It would have been

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obvious to have modified Usui et al as modified with the teaching of Kuga, so as to save power in an LCD display(see abstract and column 2, lines 33-39).

As to claim 2, Usui et al teach a method for increasing data voltage of the current frame is proportionally increased with respect to a difference between the current data voltage and the previous data voltage(see figure 5 and column 5., lines 35-42).

As to claims 3-4, Usui et al teach a data voltage having most significant bit data(D5) and least significant bit data(D1)(see figures 1-2; column 3, lines 66-68 and column 4, lines 1-33).

As to claims 8 and 14, Usui et al teach an LCD display apparatus having a loop-up table(ROM)(see figures 1-2, 9; column 5, lines 53-68 and column 6, lines 1-16).

As to claim 9, Usui et al teach an LCD display apparatus having a liquid crystal display panel(3 or 20A, 20B or 308); a timing controller(11 or 305); a data driver(23 or 24 or 306) and a gate driver(21 or 22 or 307)(see figure 1, 3, 8, 18; column 3, lines 39-65; column 4, lines 34-51 and column 16, lines 45-63).

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Usui et al(5,465,102) in view of Kuga(5,828,367) and Kasahara et al(6,414,657).

Usui et al fail to disclose a comparator having an exclusive logic.

Kasahara et al teach a comparator(62b) having an exclusive-OR operation(see figure 21 and column 27, lines 37-52). It would have been obvious to have modified Usui et al as modified with the teaching of Kasahara et al, since Usui et al having a comparator(2)(see figure 2; column 3, lines 66-68 and column 4, lines 1-33) and an

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exclusive-OR logic function could perform comparison function by determining whether two input data are different or same

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kawabe et al(US-20020024481) teach an LCD display having a correction circuit for decreasing a gradationlevel of an N-th frame input gradationlevel of gradation signal based on a relationship of an (N-1)-th frame input signal and N-th frame input singal.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lun-yi, Lao whose telephone number is (703) 305-4873.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached at (703) 305-4938.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 14, 2005



**Lun-yi Lao**  
**Primary Examiner**